

# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 18, 2014

FID: 265006830  
Permit: 265006830-P10

TO: Sensen Lin – SER

FROM: Emily Houtler – AM/7

SUBJECT: Air Dispersion Analysis for USG Interiors – Walworth (Walworth County)

## A. INTRODUCTION

A modeling analysis for USG Interiors was completed on February 7, 2014. This analysis assessed the impact of the sulfur dioxide emissions.

## B. MODELING ANALYSIS

- ◆ USG Interiors supplied the emission parameters used in the analysis for this facility via a report from their consultant, Environ. Building dimensions were determined with USEPA's BPIPPRM using measurements taken on plot plans provided with the application. Please refer to the source parameter table.
- ◆ Five years (2006-2010) of preprocessed meteorological data was used in this analysis. The surface data was collected in Madison (MSN) and the upper air meteorological data originated in Green Bay.
- ◆ The AERmic MODel (AERMOD) was also used in the analysis. The model used regulatory default options. These allow for calm wind correction, buoyancy induced dispersion, and building downwash.
- ◆ Regional background concentrations were found to be as follows:

BACKGROUND CONCENTRATIONS (Concentrations are in $\mu\text{g}/\text{m}^3$ )		
Pollutant	Averaging Period	Concentration
SO <sub>2</sub>	3 hour	11.8
	24 hour	11.2
	Annual	5.4

- ◆ The 4,500 receptors used in this analysis consisted of a rectangular grid with 25-meter resolution extending 500 meters from the sources surrounded by a 50-meter spaced grid extending 1,000 meters from the sources. Elevations were derived from the AERMOD terrain processor AERMAP, using the National Elevation Dataset.
- ◆ Since the PSD minor source baselines have not been set for Walworth County, no increment analysis was conducted.



## C. MODEL RESULTS

The results demonstrate that the ambient air quality standards for SO<sub>2</sub> will be attained and maintained assuming the emission rates and stack parameters listed in the attached source table.

Modeling Analysis Results (All Concentrations in µg/m <sup>3</sup> )			
	SO <sub>2</sub> – 3 hr	SO <sub>2</sub> – 24 hr	SO <sub>2</sub> – Annual
NAAQS Impact	444.0	178.5	20.0
Background Concentration	11.8	11.2	5.4
Total Concentration	455.8	189.7	25.4
NAAQS	1,300	365	80
% NAAQS	35.1	52.0	31.8

## D. CONCLUSION

The results of the modeling analysis demonstrate that the applicable air quality standards will be satisfied assuming the emissions rates and stack parameters listed in the source table.

USG Interiors - Walworth Stack Parameters						
ID	LOCATION (UTM-83)	HEIGHT (M)	DIAMETER (M)	VELOCITY (M/S)	TEMP (K)	SO <sub>2</sub> (#/HR)
S11V	368347, 4710662	9.45	0.51	5.91	506.5	0.15
S12	368476, 4710530	20.9	0.91	17.97	422.0	251.8
S14	368423, 4710613	14.0	0.83	21.0	302.4	0.0
S16	368387, 4710612	12.2	0.59	15.5	299.7	0.0
S18	368417, 4710613	14.0	0.85	15.3	302.4	0.0
S20	368320, 4710656	13.41	1.78	6.9	352.4	1.87
S21	368288, 4710655	15.5	1.34	20.0	352.4	3.13
S22	368313, 4710651	16.8	1.34	12.0	352.4	1.87
S24	368277, 4710648	15.2	1.68	12.9	352.4	3.13
S25	368430, 4710561	7.62	0.61	3.23	477.0	0.016
S26	368437, 4710575	7.62	0.61	3.23	477.0	0.016
S138B1A	368415, 4710542	10.3	0.37	14.2	455.2	0.117
S138A1B	368432, 4710540	10.3	0.37	14.2	455.2	0.117
S137B2A	368449, 4710540	10.3	0.37	14.2	455.2	0.117
S7A2B	368434, 4710590	10.3	0.37	14.2	455.2	0.117
S136B3A	368467, 4710539	10.3	0.483	8.3	455.2	0.117
S136A3B	368475, 4710539	9.73	0.51	7.45	455.2	0.117
S135B4A	368488, 4710538	15.8	0.47	8.7	455.2	0.117
S131514A	368499, 4710537	15.8	0.47	8.7	455.2	0.117
S135A4B	368511, 4710537	15.9	0.47	8.7	455.2	0.117
S1315A4B	368524, 4710535	15.9	0.47	8.7	455.2	0.117

